

Claims

1. An arrangement for reducing transmitting end losses in a radio apparatus which comprises a receiver and at least one transmitter which, when the apparatus is being used, are occasionally simultaneously in signal transfer state, the arrangement comprising a radio-frequency power amplifier, a first antenna filter at said transmitting end and an antenna, the arrangement further comprising at the transmitting end at least a second antenna filter the stop-band attenuation of which in the operating band of the receiver differs substantially from that of the first antenna filter in the operating band of the receiver, and switches to form a transmitting end filter of said antenna filters.
2. An arrangement according to claim 1, said switches being MEMS switches.
3. An arrangement according to claim 1, said switches being arranged to form the transmitting end filter using that one of first and second antenna filters which has a lower stop-band attenuation, when the receiver is in passive state.
4. An arrangement according to claim 1, said switches being arranged to include in the transmitting-end filter that one of first and second antenna filters which has a higher stop-band attenuation only when the receiver is in receive state.
5. An arrangement according to claims 3 and 4, the antenna filter of said antenna filters which has a lower stop-band attenuation being a low-pass-type filter and the one with a higher stop-band attenuation being a band-pass filter.
6. An arrangement according to claim 5, said transmitting end filter being the band-pass filter when the receiver is in receive state.
7. An arrangement according to claim 5, said transmitting end filter being a series connection of the low-pass-type filter and the band-pass filter when the receiver is in receive state.
8. An arrangement according to claim 1, at the transmitting end of the radio apparatus being in addition to the first and second antenna filters at least one band-pass filter, any one of which filters can be connected as the transmitting end filter by means of said switches.
9. An arrangement according to claim 1, said transmitter being one that operates at a frequency above 1.7 GHz and the receiver is a GPS receiver.

10. An arrangement according to claim 1, said transmitter and said receiver being a transmitter and a receiver in one and the same radio system.

11. An arrangement according to claim 1, said radio apparatus being arranged to operate in a first system and in a second system, which both use a same frequency band non-simultaneously, and the power amplifier is common to the transmitters conform to the both systems and the receiver is a receiver conform to the first system, the antenna end of which receiver is shared with the receiver conform to the second system.

12. An arrangement according to claim 11, the first system being WCDMA and the second system being GSM.

13. A method for reducing transmitting end losses in a radio apparatus having a receiver and at least one transmitter which, when the apparatus is being used, are occasionally simultaneously in signal transfer state, a radio-frequency power amplifier, a first antenna filter at the transmitting end, and an antenna, the radio apparatus further having at the transmitting end at least a second antenna filter, the stop-band attenuation of which in the operating band of the receiver differs substantially from that of the first antenna filter in the operating band of the receiver, the method comprising steps:

- that one of the antenna filters which has the lowest stop-band attenuation is switched as the transmitting end filter when the receiver is in passive state,
- that one of the antenna filters which has a higher stop-band attenuation is switched as at least part of the transmitting end filter when the receiver is in receive state, and
- the power of the power amplifier is adjusted after each change of a transmitting end filter to keep the transmitting power within allowed limits.

14. A mobile station comprising a receiver and at least one transmitter which, when the apparatus is being used, are occasionally simultaneously in signal transfer state, a radio frequency power amplifier, a first antenna filter at a transmitting end, and an antenna, the mobile station further comprising at the transmitting end at least a second antenna filter the stop-band attenuation of which in the operating band of the receiver differs substantially from that of the first antenna filter in the operating band of the receiver, and MEMS switches arranged to switch that one of said antenna filters which has the lowest stop-band attenuation as the transmitting end filter when the receiver is in passive state, and to switch that one of said antenna filters which has the higher stop-band attenuation as at least part of the transmitting end filter when the receiver is in receive state.